REMARKS

This Amendment accompanies a Request for Continued Examination being filed concurrently herewith. No new matter is believed to be added to the application by this Amendment.

Entry of Reply

The Examiner has entered the Reply filed January 16, 2004, as has been noted at line 7 of the Advisory Action mailed February 10, 2004.

Status of the Claims

Claims 1, 3-17, 19 and 21-25 are pending in the application. The amendments to claim 11 find support at page 5, lines 24-25 of the specification. Claims 22 and 23 find support at page 6, lines 13-20 of the specification. Claims 24 and 25 find support at page 6, lines 21-27 of the specification.

Rejections Under 35 U.S.C. §103(a) Based on Rudisill

Claims 1, 3-5, 7, 9-13, 19 and 21 remain rejected under 35 U.S.C. §103(a) as being obvious over Rudisill (U. S. Patent 5,339,179) in view of Hiyama (U.S. Patent 6,104,454). Claims 6 and 14 remain rejected under 35 U.S.C. §103(a) as being obvious over Rudisill and Hiyama, as applied to claims 1, 3-5, 7, 9-13, 17, 19 and 21, and further in view of Ohara (U. S. Patent 5,844,720). Claims 8, 15 and 16 remain rejected under 35 U.S.C. §103(a) as being obvious over Rudisill and

Hiyama, as applied to claims 1, 3-5, 7, 9-3, 17, 19 and 21, and further in view of Yokoyama (U. S. Patent 5,899,552). Applicant maintains traversal.

The Present Invention and its Advantages

The present invention pertains to a novel back light unit for a liquid crystal display that has a cone pattern formed on an upper surface of the light guide plate. As a result, only one light-path converter and only one diffusion sheet are needed. Also, a reflection of the light-guide pattern and wall surface as well as the bright lines of the light input are minimized.

The invention finds a typical embodiment in instant claim 11, which sets forth:

> 11. A back light unit for a liquid crystal display, comprising:
> a lamp in a lamp housing;
> a light-guide plate aside said lamp and said lamp housing, said light-guide plate including cones distributed in a pattern for guiding uniformly light from the lamp;
> a reflective plate placed below said light-guide plate; and
> a diffusion sheet disposed above said light-guide plate,
> wherein said cones are formed on an upper surface of said light-guide plate, and a density of cones increases as a distance from said lamp increases.

Among the advantages of the invention is the ability to uniformly illuminate to compensate for dark areas in the light guide plate (see claims 22 and 23). The invention realizes an optimal output angle θ of light exiting form the light-guide plate at about 35^{o} (see claims 24 and 25).

Distinctions of the Invention over Rudisill and the Secondary References

Distinctions of the invention over Rudisill and the secondary references have been placed before the Examiner. The inability of the cited prior art to suggest the invention is further elucidated below.

Figures 2A-2C of Rudisill show a light guide plate 36 including pits 48 distributed in a pattern. The pits 48 of Rudisill serve to enhance the reflection of ambient light from the front face of an LCD. Rudisill at column 4, lines 48-50 states: "The reflection of ambient light is enhanced by conical pits, or indentations, 48 in the top surface 44 due to the angles of the walls in the pits."

Further, Rudisill teaches that the pits 48 are uniformly distributed and consume 40% to 70% of the surface area. Rudisill at column 4, lines 38-40 states: "Pits 48, on top surface 44, are uniformly distributed, and consume 40% to 70% of the surface area in the preferred embodiment."

In contrast, the present invention utilizes cones to uniformly guide a light beam through the light incident portion to the entire of the light-guide plate. The invention is directed at preventing dark areas of the light-guide plate due to light not reaching the corners of the light-guide plate, as is shown in Figure 5 of the application.

That is, the light-guide plate of the invention allows the light to reach to corners of the light-guide plate because the cones uniformly distribute the light.

As a result, the teachings of Rudisill would fail to motivate one of ordinary skill to produce the inventive light-guide plate having uniform light distribution.

The Examiner then turns to Hiyama for teachings pertaining to a light converter and a diffusion sheet disposed above the light guide. The Examiner turns to Ohara for teachings pertaining to vertical angles. The Examiner turns to Yokoyama for teachings pertaining to a backward prism having a vertical angle.

However, none of Hiyama, Ohara or Yokoyama address the failures of Rudisill in suggesting the invention as is set forth in independent claims 1 and 11. A *prima facie* case of obviousness has thus not been made. Claims dependent upon independent claims 1 and 11 are patentable for at least the above reasons.

These rejections are accordingly overcome and withdrawal thereof is respectfully requested.

Information Disclosure Statement

Applicant thanks the Examiner for considering the information disclosure statement filed November 8, 2001, and for making the initialed PTO-1449 form of record in the application in the Office Action mailed November 29, 2002.

The Drawings

The Examiner is respectfully requested to indicate whether the drawing figures are acceptable in the next Official Action.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E.

Goozner, Ph.D. (Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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REG

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